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~~code for determining, from the one or more images, a first descriptor for a first component of at least one of the plurality of cells and a second descriptor for a second component of at least one of the plurality of cells; and
code for analyzing the first and second descriptors to determine the effect of the manipulation on the plurality of cells,
wherein said descriptors comprise numeric or logical values.~~

57. The computer program product of claim 56, wherein the manipulation is application of at least one of a chemical factor, a biological factor, an electromagnetic factor, a gravitational factor, a mechanical factor, a thermal factor, a temporal factor, and a nuclear factor.

58. The computer program product of claim 56, wherein the first descriptor is a scalar or a vector.

59. The computer program product of claim 56, wherein the first descriptor is a value specifying a morphological or statistical feature of the first component.

60. The computer program product of claim 56, wherein said first component is a protein, a protein modification, a nucleic acid, a lipid, a carbohydrate, a sub-cellular structure or an organelle.

61. The computer program product of claim 56, wherein the effect of the manipulation is at least one of the following: toxicity, specificity against a subset of tumors, a mechanism of chemical activity, a mechanism of biological activity, interaction with a target protein, an adverse biological effect, an adverse clinical effect, cellular availability, a pharmacological property, a gene expression profile, absorption, excretion, distribution, metabolism, and a pharmacodynamic effect.

62. The computer program product of claim 56, wherein the code for analyzing the first and second descriptors comprises code for performing principle component analysis on the first and second descriptors.

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63. A computer program product comprising a machine readable medium on which is provided program instructions for predicting properties of a chemical compound based on

information about effects of at least one of a plurality of known compounds on one or more cell populations, the instructions comprising:

code for receiving one or more images of the at least one of a plurality of cells that have been exposed to the chemical compound;

code for determining, from the one or more images, multiple descriptors for multiple components of at least one of the plurality of cells;

code for determining a relationship between said descriptors of said chemical compound with other descriptors of said known compounds; and

code for making an inference about said chemical compound based upon said other descriptors,

wherein said descriptors and other descriptors comprise numeric or logical values.

64. The computer program product of claim 63, wherein the multiple components are independently selected from the group consisting of a protein, a protein modification, a nucleic acid, a lipid, a carbohydrate, a sub-cellular structure or an organelle.

65. The computer program product of claim 63, wherein the property that is being predicted is at least one of the following: toxicity, specificity against a subset of tumors, a mechanism of chemical activity, a mechanism of biological activity, interaction with a target protein, an adverse biological effect, an adverse clinical effect, cellular availability, a pharmacological property, a gene expression profile, absorption, excretion, distribution, metabolism, and a pharmacodynamic effect.

Please **replace** Claims 49 and 50 with the following **amended** claims that have the corresponding numbers.

49. (Amended) A computer program product for determining a property of a manipulation based upon determination of effects of said manipulation on at least two of a plurality of components of at least one of a plurality of cells, said computer program product comprising:

code for receiving one or more images of at least two of a plurality of components of at least one of a plurality of cells that have been exposed to the manipulation, wherein said manipulation is selected from the group consisting of applying a hormone, applying a growth